CLAIMS

1. An imaging system for high energy radiation direct conversion scan imaging, comprising:

a high energy radiation source member;

a semiconductor high energy radiation direct conversion imaging device including a plurality of imaging cells, each imaging cell comprising a detector cell and a readout cell for producing imaging cell output values representative of high energy radiation incident on said detector cell;

said source member and/or said imaging device arranged to move substantially continuously relative to an object position for scanning an object at said object position; and

wherein said readout cells are operable to readout said imaging cell output values at time intervals substantially corresponding to an object image point traversing half the distance or less of a detector region in the scanning direction during a scan.

2. An imaging system according to claim 1, operable to read out an image cell value from each of at least a subset of said plurality of imaging cells during each of said time intervals.

3. A system according to claim 1, wherein said source member and/or said imaging device are moveable to image a part of an object in said object position from two or more positions.

4. An imaging system according to claim 1, wherein said source member and/or said imaging device are arranged to rotatably move relative to said object position.

5. An imaging system according to claim 4, said source member and/or said imaging device are rotatably moveable about a moveable axis of rotation.

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6. A dental panoramic imaging system comprising an imaging system according to claim 1.

7. A dental computerised tomography imaging system comprising an imaging system according to 1.

8. An imaging system according to claim 1 for in-line high energy radiation inspection system, wherein said source member and/or said imaging device are arranged for linear movement relative to said object position.

9. An imaging system according to claim 1, wherein said source member comprises a support for a high energy radiation source.

10. An imaging system according to claim 1, wherein said source member comprises a high energy radiation source.

11. An imaging system according to claim 9, wherein said high energy radiation source comprises a steerable beam high energy radiation source.

12. An imaging system according to claim 11, wherein said steerable beam high energy radiation source comprises an electrically steerable beam.

13. An imaging system according to claim 9, wherein said high energy radiation source is operated to continuously radiate said high energy radiation during said scanning.

14. An imaging system according to claim 1, wherein said imaging device is operable to readout said imaging cell output values at time intervals corresponding to an object image point traversing a part of said detector region .

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15. An imaging system according to claim 14, wherein said imaging device is operable to readout said imaging cell output values at time intervals substantially corresponding to an object image point traversing half a detector region.

16. An imaging system according to claim 1, wherein said readout cell is operable to readout said imaging cell output values during said traversing of said detector region.

17. An imaging system according to claim 16, wherein said readout cells are operable to readout said imaging cell output values substantially continuously during said traversing of said detector region.

18. An imaging system according to claim 1, wherein said detector region comprises a detector cell.

19. An imaging system according to claim 1, wherein said readout cells are operable to readout said imaging cell output values after said traversing.

20. An imaging system according to claim 1, wherein said readout cells are operable to readout said imaging cell output values at a rate of substantially 5MHz or more.

21. An imaging system according to claim 20, wherein said readout cells are operable to readout said imaging cell output values at a rate greater than 10MHz.

22. An imaging system according to claim 21, wherein said readout cells are operable to readout said imaging cell output values at a rate of 20MHz or more.

23. An imaging system according to claim 1, wherein said imaging device is operable to readout imaging cell output values for at least some of said plurality of imaging cells of said imaging device.

24. An imaging system according to claim 1, comprising a plurality of imaging devices.

25. An imaging system according to claim 24, wherein each of said plurality of imaging devices are readout individually.

26. An imaging system according to claim 24, wherein two or more imaging devices are coupled together for reading out said imaging cell output values from more than one imaging device.

27. An imaging system according to claim 1, interfaceable to data acquisition and control apparatus for receiving and storing imaging cell output values.

28. An imaging system according to claim 27, wherein said data acquisition and control apparatus comprises a personal computer.

29. An imaging system according to claim 28, interfaceable to said personal computer, notebook or laptop computer using an USB interface bus.

30. An imaging system according to claim 29, interfaceable to said personal computer, notebook or laptop computer using an USB2 interface bus.

31. An imaging system according to claim 1, said readout cells comprising high speed integrated circuitry.

32. An imaging system according to claim 31, said readout cells comprising circuitry fabricated in accordance with one or more of the following technologies:

CMOS; Double Poly MOS; NMOS; JPFCT; P2CMOS; XMOS; GaAs integrated circuit processes; ECL; TTL; Bipolar Linear; BiCMOS; EEPROM/PLASH process; SALICIDE process; Op to electronics; Complementary Bipolar DLM2; Copper Fine Line; and BCD C Bipolar/CMOS/DMOS.

33. A method of high energy radiation direct conversion scan imaging using an imaging system including:

a high energy radiation source member; and

a semiconductor high energy radiation direct conversion imaging device including a plurality of image cells, each imaging cell comprising a detector cell and a readout cell for producing imaging cell output values representative of high energy radiation incident on said detector cell;

the method comprising:

moving said source member and/or said imaging device substantially continuously relative to an object position for scanning an object of said object position; and

reading out imaging cell output values at time intervals substantially corresponding to an object image point traversing half the distance of a detector region in the direction of scanning.

34. A method according to claim 33, wherein said reading out step includes reading out an image cell value from each of at least a subset of said plurality of imaging cells during each of said time intervals.

35. A method according to claim 33, wherein said step of moving comprises moving said source member and/or imaging device to image a part of an object in said object position from two or more positions.

36. A method according to claim 33, further comprising arranging said source member and/or said imaging device to rotatably move relative to said object position.

37. A method according to claim 36, wherein said source member and/or said imaging device are arranged for a rotatable movement about a movable axis of rotation.

38. A method according to claim 33, the method being used for dental panoramic imaging.

39. A method according to claim 33, the method being used for dental computerised tomography imaging.

40. A method according to claim 33, the method being used for in-line high energy radiation inspection.

41. A method according to claim 33, wherein said high energy radiation source member comprises a high energy radiation source continuously operated to radiate high energy radiation during scanning.

42. A method according to claim 33, wherein said step of reading out comprises reading out imaging cell output values at time intervals corresponding to an object image point traversing a part of said detector region.

43. A method according to claim 33, wherein said reading step comprises reading out imaging cell output values at time intervals substantially corresponding to an object image point traversing half of a detector region.

44. A method according to claim 33, wherein said step of reading comprises reading out imaging cell output values drawing said traversing of said detector region.

45. A method according to any one of claim 33, wherein said detector region comprises a detector cell.

46. A method according to claim 33, wherein said step of reading comprises reading image cell output values for at least some of said plurality of imaging cells of said imaging device.

47. A method according to claim 33, for an imaging system including a plurality of imaging devices, and wherein said step of reading comprises reading each of said plurality of imaging device individually.

48. A method according to claim 33, for an imaging system comprising a plurality of imaging devices having two or more imaging devices coupled together, and wherein said step of reading comprises reading out image cell output values from more than one imaging device.

49. An imaging system according to claim 1, wherein said imaging device is operable to readout the imaging cell output values at a frame rate of 60 frames/second.

50. An imaging system according to claim 1, wherein said imaging device is operable to readout the imaging cell output values at a frame rate of 100 frames/second.

51. An imaging system according to claim 1, wherein said imaging device is operable to readout the imaging cell output values at a frame rate of 200 frames/second.